Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

CONTRACT NO. N68711-98-D-5713
CTO NO. 0072

FINAL

DESIGN PLAN
WORK AREAS 15 AND 26

May 29, 2008

DCN: ECSD-5713-0072-0009.R1

**STORM DRAIN AND
SANITARY SEWER REMOVAL
PARCELS C AND D, HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA**

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PARCELS C AND D, HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA

DCN: ECSD-5713-0072-0009.R1

APPROVAL FORM

William J. Dougherty
TtEC Project Manager

MAY 29. 2008
Date

Daryl DeLong
Radiation Safety Officer

May 29, 2008
Date

Laurie Lowman
Radiological Affairs Support Office

29 May 2008
Date

TETRA TECH EC, INC.

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N68711-98-D-5713 (RAC III)

Document Control No. ECSD-5713-0072-0009.R1

File Code: 5.0

TO: Contracting Officer
Naval Facilities Engineering Command SW
Ms. Beatrice Appling, AQE.BA
Building 127, Room 108
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: 05/30/08
CTO: 0072
LOCATION: Hunters Point Shipyard

FROM: A. N. Bolt

A. N. Bolt, Program Manager

DESCRIPTION: Final Design Plan Work Areas 15 and 26, May 29, 2008
Storm Drain and Sanitary Sewer Removal Parcels C and D, HPS

Draft has become Final with no changes. Draft was sent out as comb bound therefore there is no Report spine.

TYPE: ☐ Contract/Deliverable ☒ CTO Deliverable ☐ Notification ☐ Other

VERSION: Final (e.g. Draft, Draft Final, Final, etc.)

REVISION #: N/A

ADMIN RECORD: (PM to Identify) Yes ☒ No ☐ Category ☐ Confidential ☐

SCHEDULED DELIVERY DATE: 05/29/08

ACTUAL DELIVERY DATE: 05/30/08

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08-05-30 P03:26 OUT

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

CSO	Caretaker Site Office
DoN	Department of the Navy
EP	extraneous pipe
HPS	Hunters Point Shipyard
HRA	Historical Radiological Assessment
IRP	Installation Restoration Program
NAVFAC SW	Naval Facilities Engineering Command, Southwest
NAVSEA	Naval Sea Systems Command
RASO	Radiological Affairs Support Office
RPM	Remedial Project Manager
TtEC	Tetra Tech EC, Inc.
WA	work area

1.0 INTRODUCTION

This Design Plan describes the scope and approach for removing the storm drains and sanitary sewers in Parcel C, Work Area (WA) 15 (Fisher Street) and Parcel D, WA 26 (Spear Avenue) at Hunters Point Shipyard (HPS) in San Francisco, California. The Department of the Navy (DoN), Naval Facilities Engineering Command, Southwest (NAVFAC SW) and the Radiological Affairs Support Office (RASO) are directing this removal action, which will be executed under Contract No. N68711-98-D-5713, Contract Task Order 0072.

The DoN determined from review of the operational history of HPS and site-specific investigative data that the storm drain and sanitary sewer systems in Parcels B, C, D, E, and E-2 may contain radioactive material. This conclusion was documented in the *Final Historical Radiological Assessment, Volume II* (HRA) (Naval Sea Systems Command [NAVSEA], 2004). Consequently, the DoN is directing this removal action under the Department of Defense Installation Restoration Program (IRP) in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act and the National Oil and Hazardous Substances Pollution Contingency Plan. This decision is documented in the *Final Basewide Radiological Removal Action, Action Memorandum – Revision 2006* (DoN, 2006), which was updated to implement the recommendations of the HRA.

This Design Plan will be implemented in accordance with the construction, radiological screening, waste management, and site restoration strategies defined in the *Final Project Work Plan, Revision 1, Base-wide Storm Drain and Sanitary Sewer Removal* (Tetra Tech EC, Inc. [TtEC], 2007) (Work Plan). This Design Plan addresses the project-specific requirements and includes detailed design drawings and technical specifications (Appendices A and B, respectively). Quality control objectives are addressed in Appendix C. Exceptions to the approach and procedures delineated in the Work Plan, if any, are identified in this Design Plan.

The Design Plan is organized as follows:

- **Section 1.0 – Introduction:** Section 1.0 provides project background information and describes the relationship between this Design Plan and the Work Plan.
- **Section 2.0 – System Description:** Section 2.0 describes the storm drain and sanitary sewer systems.

- **Section 3.0 – Fieldwork Implementation:** Section 3.0 describes the fieldwork scope, procedures, and methods applicable to the storm drain and sanitary sewer removal action in WAs 15 and 26. The detailed information in Section 3.0 supplements the information provided in Section 7.0 of the Work Plan.
- **Section 4.0 – References:** Section 4.0 lists the references cited in the Design Plan.
- **Appendices:** Appendix A – Design Drawings
  Appendix B – Construction Specifications
  Appendix C – Contractor Quality Control Plan

2.0 SYSTEM DESCRIPTION

2.1 BACKGROUND

Until 1958, the storm drain and sanitary sewer systems at HPS were combined. All flow through the systems was directed to outfalls that discharged to San Francisco Bay. In 1958, the first of three separation projects was completed. The separation projects provided for installation of dedicated sanitary sewer piping and pump stations that discharged sanitary sewer effluent off site to a publicly owned treatment works operated by the City and County of San Francisco. The last of these projects was completed in 1976. To varying degrees, each of the three separation projects involved work within Parcel C and Parcel D; however, inspection of the systems has revealed that some cross-connections between the two systems may still exist.

2.2 WORK AREAS 15 AND 26 STORM DRAIN AND SANITARY SEWER SYSTEMS

The design drawings (Appendix A) identify the storm drain and sanitary sewer systems to be removed under this plan and provide information regarding pipe size, flow direction, material type, and length. The identification numbers assigned to each system component and trench will be used for tracking purposes during the removal action.

The system description provided above and detailed in the design drawings is based on the latest available engineering drawings (prepared in 1995). In some cases, other sources of historical data may provide differing details regarding system construction and configuration. Actual conditions will be verified in the field and taken into account during the removal action. Deviations from the details provided in this Design Plan will be documented in the post-excavation reports.

3.0 FIELDWORK IMPLEMENTATION

This section describes the scope, procedures, and methods applicable to preparing for and executing the fieldwork. The fieldwork will encompass the items listed below and described in this section:

- Permits and notifications
- Pre-construction meeting
- Environmental resources survey
- Vegetation removal
- Geophysical survey
- Topographic survey
- Mobilization
- Excavation and system removal
- Stormwater, sediment, and erosion control
- Radiological surveys and sampling
- Final Status Surveys
- Trench backfill
- Site restoration
- Decontamination and free-release surveys
- Waste classification, storage, and disposal
- Demobilization

3.1 PERMITS AND NOTIFICATIONS

Permitting and notification requirements are defined in the Work Plan. Since new outfalls will not be installed during the execution of this Design Plan, advance notice to the Regional Water Quality Control Board of changes in the HPS stormwater discharge permit will not be required.

TtEC will maintain a current annual excavation permit from the California Occupational Safety and Health Administration, and the 5-day notification requirement will be fulfilled before excavation begins. Underground Service Alert (1-800-227-2600) will be notified prior to beginning intrusive activities.

Because the removal action will occur along well-traveled streets, the Remedial Project Manager (RPM), Caretaker Site Office (CSO), Resident Officer in Charge of Construction, HPS tenants, and HPS security will be notified of any road closures and changes to traffic flow that will be necessary to support the work.

3.2 PRE-CONSTRUCTION MEETING

Prior to beginning field activities, a pre-construction meeting will be held at the site, as discussed in the Work Plan.

3.3 ENVIRONMENTAL RESOURCES SURVEY

An environmental resources survey will be completed prior to mobilizing. Because the removal action will be confined to the asphalt-paved streets of an industrial area, no impact to sensitive habitats or special-status species is anticipated, and long-term monitoring during construction is not currently planned.

3.4 VEGETATION REMOVAL

The work area will be confined to paved streets that are devoid of vegetation.

3.5 GEOPHYSICAL SURVEY

Prior to initiating intrusive activities, a records review will be performed and a geophysical survey will be conducted to identify utilities in the work area. Active utilities identified during the geophysical survey will be isolated or otherwise protected from damage, as necessary.

3.6 TOPOGRAPHIC SURVEY

Existing topographic data for Parcels C and D are available in the Hunters Point Naval Shipyard, San Francisco, California – Base Map (44 Sheets) of November 1, 1993 (Gahagan and Brian, 1993). These data are adequate to begin the storm drain and sanitary sewer line removal action, and pre-construction surveys will not be required.

3.7 MOBILIZATION

Mobilization activities will include site preparation, transfer of equipment and material to the work site, and orientation and training of field personnel, as described in the Work Plan. Prior to mobilization, the appropriate DoN personnel, including the RPM, RASO, and CSO, will be notified regarding the planned schedule.

3.8 EXCAVATION AND SYSTEM REMOVAL

The project site applicable to this Design Plan is divided into two WAs. WA-15 encompasses the storm drain and sanitary sewer systems along Fisher Street in Parcel C. WA-26 encompasses the systems along Spear Avenue in Parcel D. The design drawings in Appendix A identify the piping and system components that are to be removed, approximately 4,790 linear feet in all (2,786 in WA-15 and 2,004 in WA-26). The excavation volume is estimated to be 48,650 cubic yards (27,400 in WA-15 and 21,250 in WA-26), and approximately 2,025 cubic yards of asphalt and 19 manholes will be removed. Excavation depths are expected to range between approximately 3 and 21 feet below ground surface. No monitoring wells will be affected by the work.

Some of the storm drain and sanitary sewer lines that are to be removed extend beyond the limits of the WAs addressed by this plan. Because this may result in lines remaining in place that are no longer functional, the nonfunctional lines will be sealed.

None of the work activities to be performed are expected to deviate from the processes or procedures identified in the Work Plan. To the extent practicable, the trench sidewalls will be cut vertically to minimize the quantity of soil to be handled, scanned, and sampled. No one will be allowed into the trenches unless it is deemed safe by a designated competent person. Excavated soil will be loaded into trucks and transferred to the radiological screening yard for screening and sampling. Soil that meets the criteria specified in the Sampling and Analysis Plan may be reused as backfill material. Soil that does not meet the specified criteria will be disposed of by the DoN waste disposal contractor.

Piping, manholes, and other sewer components will be removed and staged within their respective WA pending radiological survey activities. If sufficient material is present within these components, sediment and solid samples will be collected and analyzed in accordance with the Work Plan.

Previously unidentified extraneous pipes (EP) may be encountered within the limits of the trench excavations. Those EPs with the historical potential to have carried fluids will be identified and marked. These EPs will be tapped and scanned for radiological contamination and, if sediment or solid material is present in sufficient quantity, a sample will be collected for radiological analysis. Swipe samples will be collected from the interior surfaces of the EPs and analyzed for radiological contamination. If contamination is identified, the EPs will be removed. Uncontaminated EPs and non-fluid bearing lines will be identified on the record drawings but left in place.

3.8.1 Installation Restoration Program (IRP) Site Integration

The work to be performed under this plan will not encroach on any IRP sites.

3.8.2 Excavation Approach

The excavation approach identified in the Work Plan will be followed for the activities in WAs 15 and 26. No exceptions are anticipated.

3.9 STORMWATER, SEDIMENT, AND EROSION CONTROL

Stormwater, sediment, and erosion controls will comply with the Work Plan and attached Specification 02270 (Appendix B). Related engineering details are provided in Appendix A.

3.10 RADIOLOGICAL SURVEYS AND SAMPLING

The radiological survey and sampling protocols for excavated material identified in the Work Plan will be followed. No exceptions are anticipated.

Based on the soil conditions and type of piping expected to be encountered during the removal action, the Parcel B reference areas and associated radiological activity levels will be used, subject to RASO concurrence. Should actual field conditions be found to differ from those expected, new reference areas will be selected in conjunction with the RASO.

There are no radiologically impacted sites associated with the activities in WAs 15 and 26. However, based on review of the operational history of HPS and site-specific investigative data, the DoN determined that the storm drain and sanitary sewer system in Parcels B, C, D, E, and E-2 may contain radioactive material. The potential radionuclides of concern associated with the activities in WAs 15 and 26 are expected to be limited to cesium-137, radium-226, and strontium-90.

3.11 FINAL STATUS SURVEYS

The Final Status Survey and sampling requirements identified in the Work Plan will be followed. No exceptions are anticipated.

3.12 TRENCH BACKFILL

Backfilling will begin only when the results of the radiological surveys and sampling activities confirm that no contamination is present above the radiological remedial objectives and RASO concurrence is obtained. Backfill material sources and placement will conform to the requirements of the Work Plan and attached Specification 02300 (Appendix B).

3.13 SITE RESTORATION

A paving contractor will be selected by the DoN to repave designated traffic areas, as necessary. No other restoration activities are planned.

3.14 DECONTAMINATION AND FREE-RELEASE SURVEYS

Free-release survey activities are specified in the Work Plan. No exceptions are anticipated.

3.15 WASTE CLASSIFICATION, STORAGE, AND DISPOSAL

Waste materials generated as a result of the removal action will be managed in accordance with Waste Management Plan included in the Work Plan. No exceptions are anticipated.

3.16 DEMOBILIZATION

Upon completion and acceptance of the fieldwork, the radiological contractor will demobilize from the site in accordance with the methods and standards specified in the Work Plan. No exceptions are anticipated.

4.0 REFERENCES

DoN. 2006. *Final Basewide Radiological Removal Action, Action Memorandum – Revision 2006,* Hunters Point Shipyard, San Francisco, California.

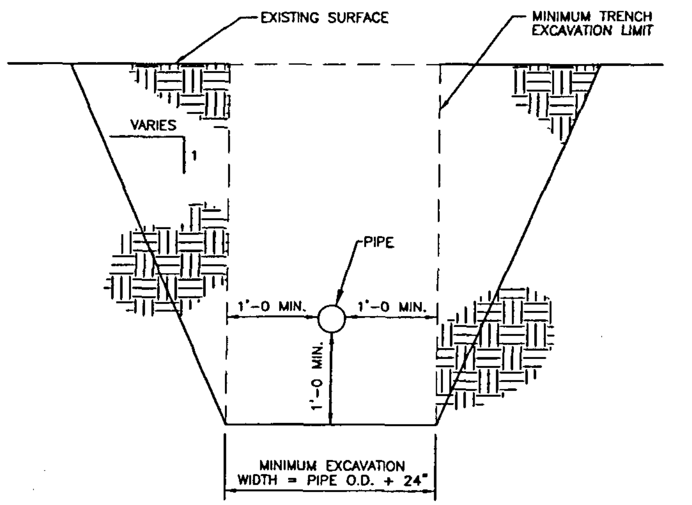
Gahagan and Brian. 1993. Hunters Point Naval Shipyard, San Francisco, California – Base Map. 44 sheets. Prepared for the DoN Western Division. November 1.

NAVSEA. 2004. *Final Historical Radiological Assessment, Volume II.* August 31.

TtEC. 2007. *Final Project Work Plan, Revision 1, Base-wide Storm Drain and Sanitary Sewer Removal*, Hunters Point Shipyard, San Francisco, California. August 21.

APPENDIX A

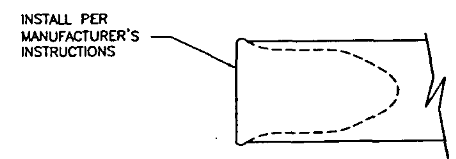
DESIGN DRAWINGS



NOTES:
1. PROVIDE SHORING AS DIRECTED BY THE ENGINEER.
2. TRENCH SHALL BE VERTICAL IF CONDITIONS ALLOW.
3. TRENCH WALL EXCAVATIONS CAN BE SLOPED OR BENCHED AS DIRECTED BY THE FIELD ENGINEER.

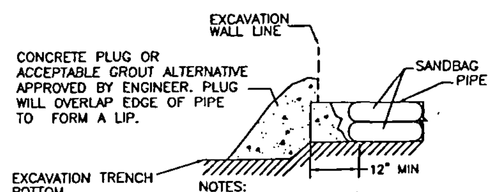
PIPE REMOVAL TRENCH DETAIL (TYP)

NTS



MECHANICAL PLUG

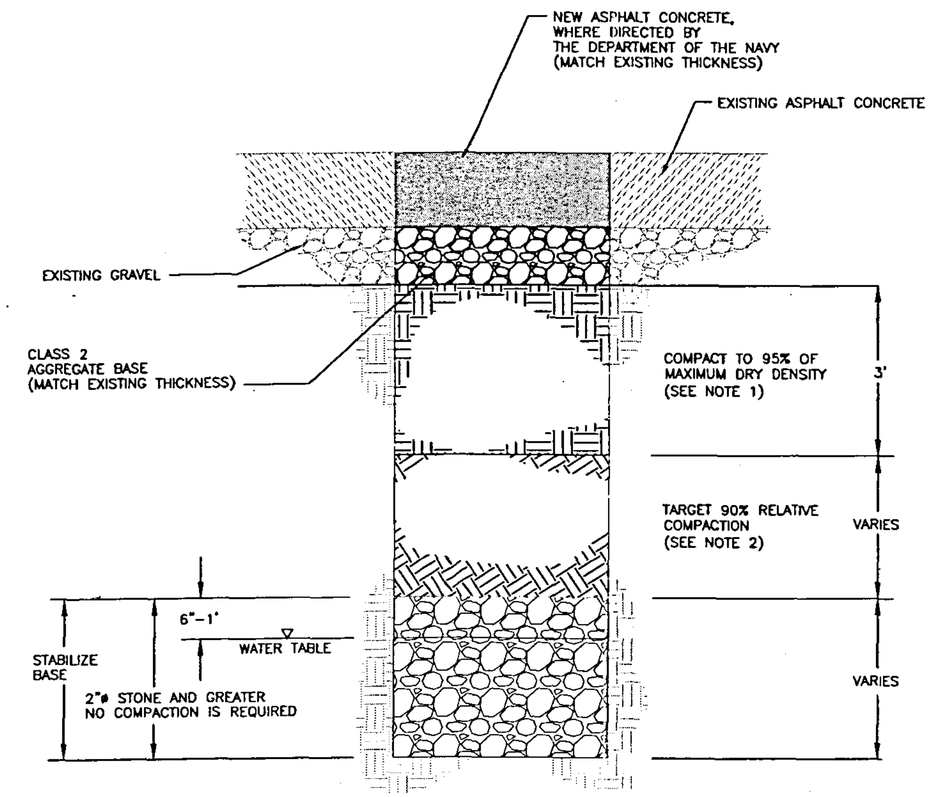
NTS



NOTES:
1. INSTALL SANDBAG (IF PIPE SIZE ALLOWS) TO PREVENT CONCRETE/DEBRIS BACK FLOW.
2. ENGINEER TO DETERMINE WHEN CONCRETE/GROUT CAN BE USED.

CONCRETE/GROUT PLUG

NTS



TRENCH COMPACTING/PAVEMENT REPLACEMENT DETAIL FOR MAIN ARTERIAL STREETS

NOTES:

1. WHERE MAIN ARTERIAL STREETS ARE DESIGNATED ON THE DRAWINGS, A RELATIVE COMPACTION OF NOT LESS THAN 95% IS REQUIRED THROUGHOUT EACH LAYER/LIFT OF BACKFILL WITHIN 3 FEET OF PAVEMENT *SUBGRADE*, OR ADJACENT GROUND (CITY AND COUNTY OF SAN FRANCISCO STANDARD SPECIFICATION SECTION 707.02). A MINIMUM OF ONE COMPACTION SAMPLE SHALL BE TAKEN EVERY 50 FEET OF TRENCH. LABORATORY TESTS FOR MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT ARE REQUIRED FOR EACH BATCH/SOURCE OF BACKFILL MATERIAL. A MINIMUM OF ONE SAMPLE FOR EVERY 5000 CUBIC YARDS IS REQUIRED. ADDITIONAL SAMPLES MAY BE REQUESTED BY ENGINEERING.

2. FOR AREAS BELOW 3 FEET OF PAVEMENT SUBGRADE, TARGET A RELATIVE COMPACTION OF 90% OR MORE. NO IN-SITU TESTING IS REQUIRED. USE A VIBRATORY OR NEEDLE/WHEEL COMPACTOR ATTACHMENT WITH THE BACKHOE/EXCAVATOR TO COMPACT THE SOIL ABOVE THE STABILIZED BASE. THE VIBRATORY/IMPACT ENERGY REQUIRED (NUMBER OF PASSES/SIZE OF ATTACHMENT) WILL DEPEND ON THE TRENCH SIZE AND CONDITION, TYPE OF SOIL AND SHALL BE EVALUATED BY ENGINEERING.

DRAFT
02-25-08

WORKING DRAWING

REV NO	DESCRIPTION	DATE	APPRV.

RESPONSIBLE ENGINEER: T. LAI
DRAWN BY: A. CRABTREE
CHECKED BY: L. BOREEN
PROJECT ENGINEER: T. LAI
DCN: ECSD-5713-0072-0009
DESIGN FILE NO. T07-DETAILS2_05-08-07.DWG
SCALE: AS SHOWN
SHEET SIZE: D

HUNTERS POINT SHIPYARD
SAN FRANCISCO, CA
P.O. BOX 884836, SAN FRANCISCO, CA 94188

TETRA TECH EC, INC
1230 COLUMBIA STREET, SUITE 750
SAN DIEGO, CA 92101
TEL: (619) 234-8690 FAX: (619) 234-8591

HUNTERS POINT SHIPYARD
CIVIL DETAILS

DRAWING NO.
T07-DETAILS

SHEET: 1 OF 1
REVISION: A

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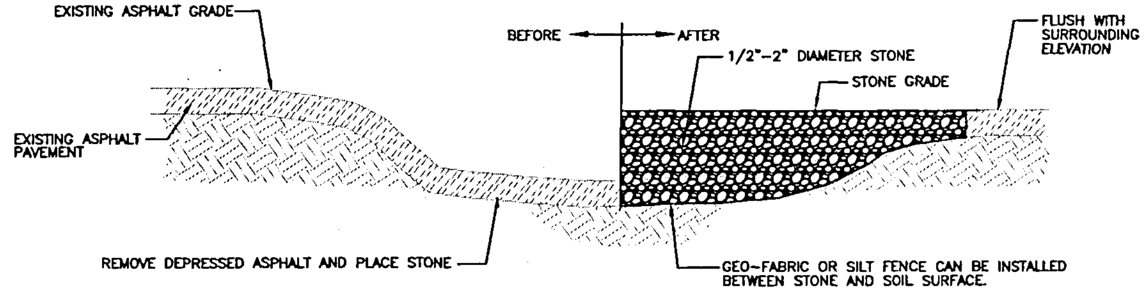
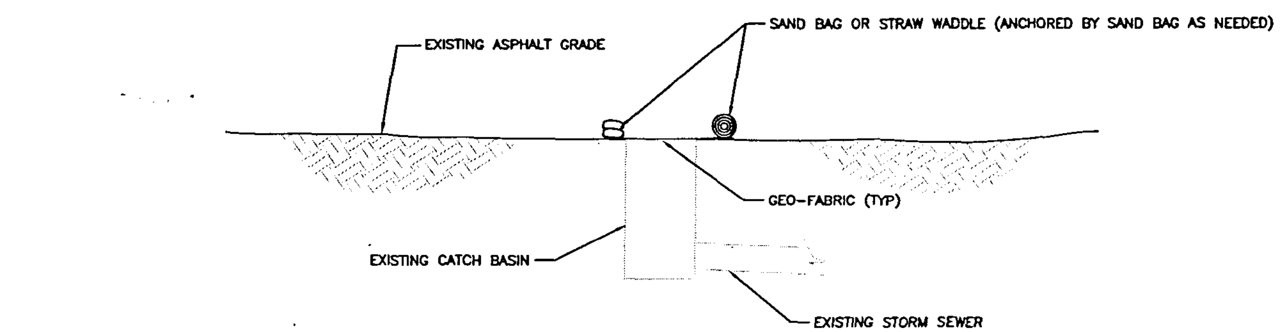
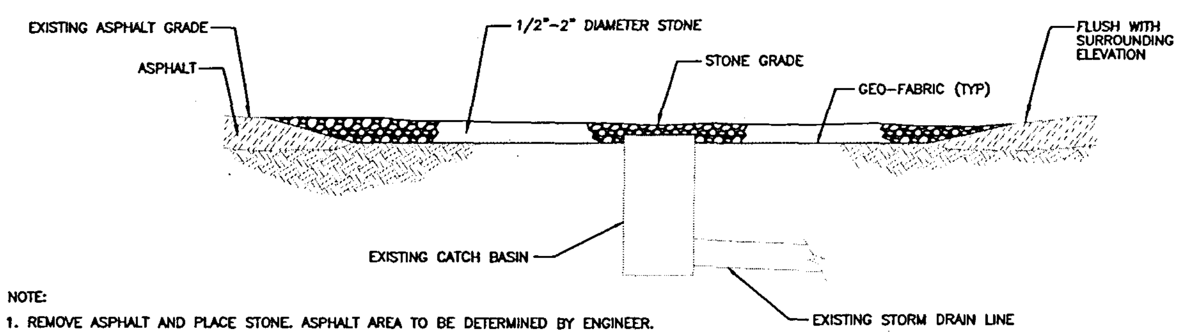


CASE 1: EXISTING PAVED AREAS WITH DEPRESSION

NTS



DETAIL 1: SMALL AMOUNT OF SEDIMENT



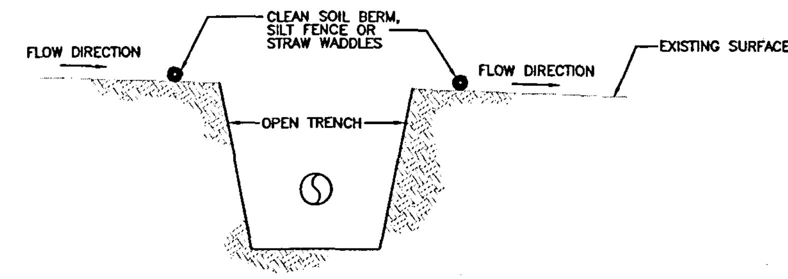
NOTE:

1. REMOVE ASPHALT AND PLACE STONE. ASPHALT AREA TO BE DETERMINED BY ENGINEER.

DETAIL 2 - LARGE AMOUNT OF SEDIMENT

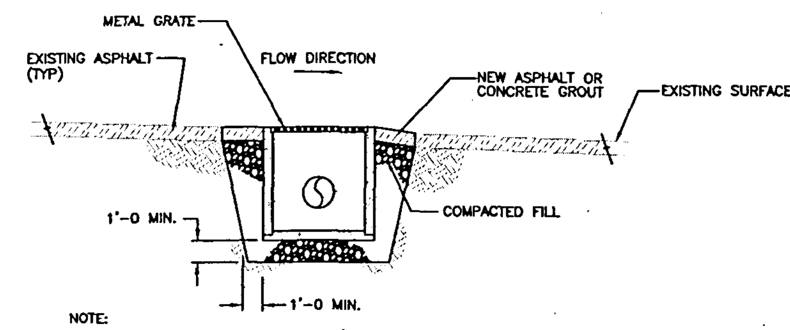
CASE 2: FUNCTIONAL CATCH BASIN

NTS



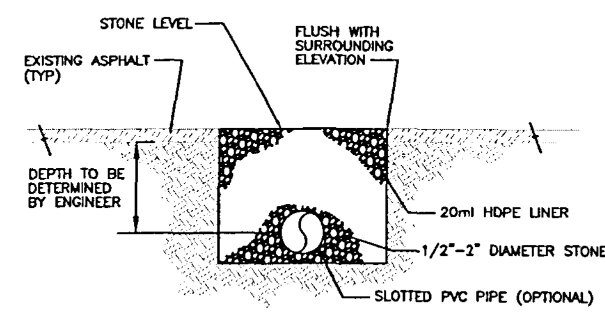
CASE 3: OPEN TRENCHES

NTS



NOTE:
1. USE A PRE-CAST JUNCTION BOX (DESIGNED BY ENGINEER) IF PIPE IS USED FOR EXTENTION.

DETAIL 1 - HIGH TRAFFIC ROAD CROSSING

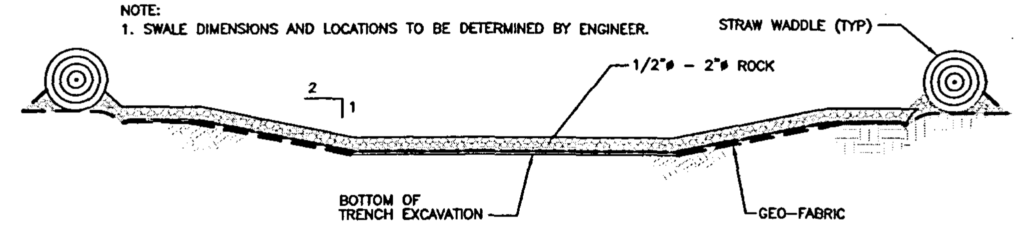


DETAIL 2 - LOW TRAFFIC ROAD CROSSING

CASE 4 : ROAD CROSSINGS

NTS

NOTE:
1. SWALE DIMENSIONS AND LOCATIONS TO BE DETERMINED BY ENGINEER.



CASE 5: SURFACE SWALES

NTS

DRAFT
02-25-08

WORKING DRAWING

HUNTERS POINT SHIPYARD
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RESPONSIBLE ENGINEER: T. LAI
DRAWN BY: A. CRABTREE
CHECKED BY: L. BOREEN
PROJECT ENGINEER: T. LAI
DCN: ECSD-5713-0072-0009
DESIGN FILE NO. T07-DETAILS_05-08-07.DWG
SCALE: AS SHOWN
SHEET SIZE: D

REV NO	DESCRIPTION	DATE	APPRV.

HUNTERS POINT SHIPYARD
SOIL EROSION, SEDIMENT, AND STORMWATER CONTROL
RUNOFF MEASURES

DRAWING NO.
TO7-DETAILS

SHEET: 1 OF 1
REVISION: A

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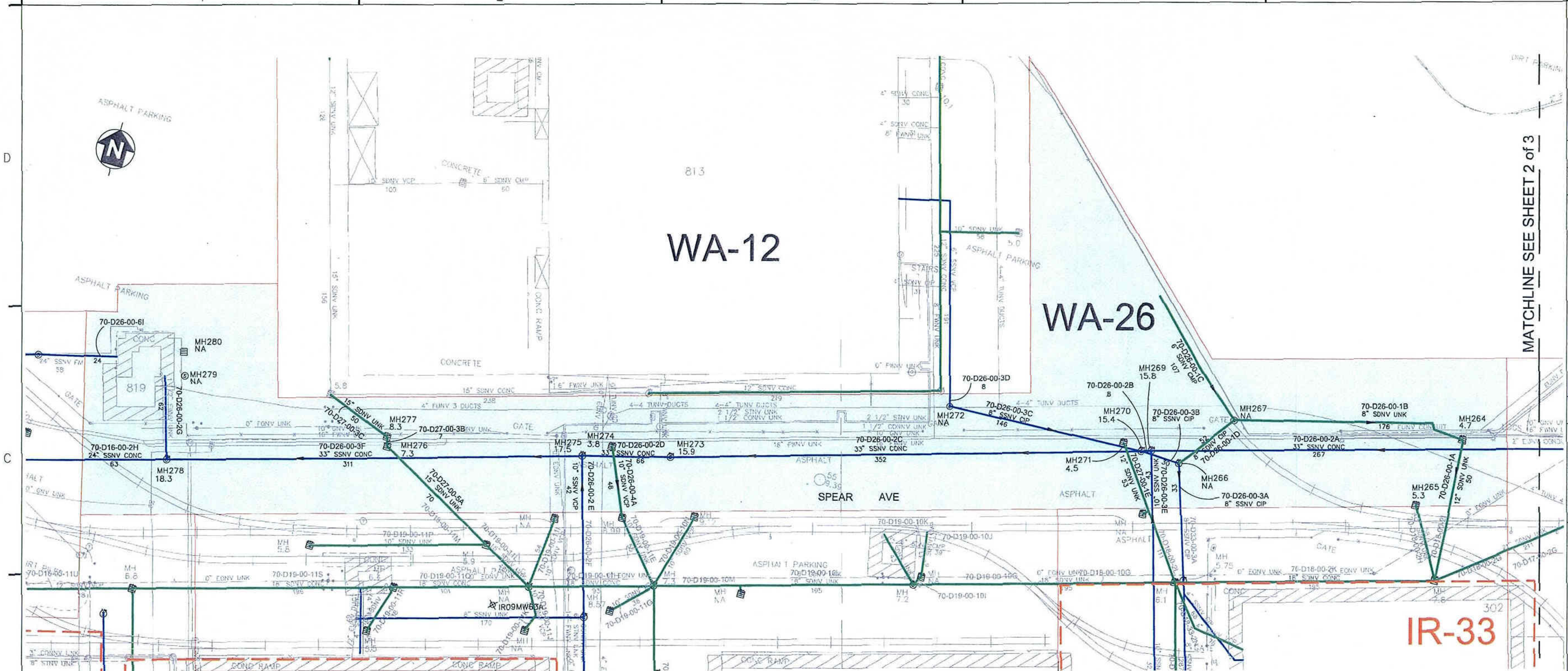


LEGEND

SSNV – SANITARY SEWER LINE
SDNV – STORM DRAIN LINE
UNK – UNKNOWN
VCP – VITRIFIED CLAY PIPE
CIP – CAST IRON PIPE
CONC – CONCRETE
ABAND – ABANDON
PRF – PERFORATED
CMP – CORRUGATED METAL PIPE
FM – FORCE MAIN
RCP – REINFORCED CONCRETE PIPE
PVC – POLYVINYL CHLORIDE
CONNV – CONDENSATE LINE
STNV – STEAM LINE
SWNV – SALT WATER LINE
AIRNV – AIR LINE

157 – IMPACTED BUILDINGS
10 FOOT BUFFER

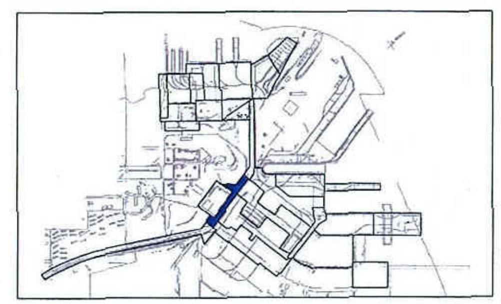
IR09MW63A – MONITORING WELL

MH 250 – MANHOLE NUMBER
15.5 – BOTTOM DEPTH
OR UNK – BOTTOM DEPTH UNKNOWN
(S) OR [grate] OR (D)

0" OR 6" SDNV VCP
PIPE SIZE UNKNOWN
PIPE SIZE AND TYPE
IR BOUNDARIES
IMPACTED STORM, SANITARY PIPES AND STRUCTURES
06-B02-26-1A 67 – IMPACTED TRENCH ID INSIDE IR WITH DISTANCE (DISTANCE IN FEET)
06-B02-00-1A 42 – IMPACTED TRENCH ID OUTSIDE IR WITH DISTANCE (DISTANCE IN FEET)

XX-XXX-XX-XX SEGMENT IDENTIFICATION
- SEGMENT NO.
- TRENCH NO.
- IR SITE ID, 00 IF NON–IR SITE
- WORK AREA
- TASK ORDER NUMBER

WA-14 – WORK AREAS
STORM DRAIN
SANITARY SEWER
FLOW DIRECTION (TYP)
PARCEL BOUNDARY



KEY PLAN

DATUM:
HORIZONTAL: BASED ON NAD 27 CALIFORNIA COORDINATE SYSTEM, ZONE 3. CGF = 0.999286.
VERTICAL: BASED ON 1929 NGVD.
STATION BOUNDARY WAS DETERMINED FROM NAVFAC DWG. NOS. 1045757, 1045758, 1045759.

DRAFT
02-25-08

40 0 40 80 (feet)

WORKING DRAWING

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REV NO	DESCRIPTION	DATE	APPRV.

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DRAWN BY: A. CRABTREE
CHECKED BY: L. BOREEN
PROJECT ENGINEER: T. LAI
DCN: ECSD-5713-0072-0009
DESIGN FILE NO. 2597-WA14-5_26.DWG
SCALE: AS SHOWN
SHEET SIZE: D

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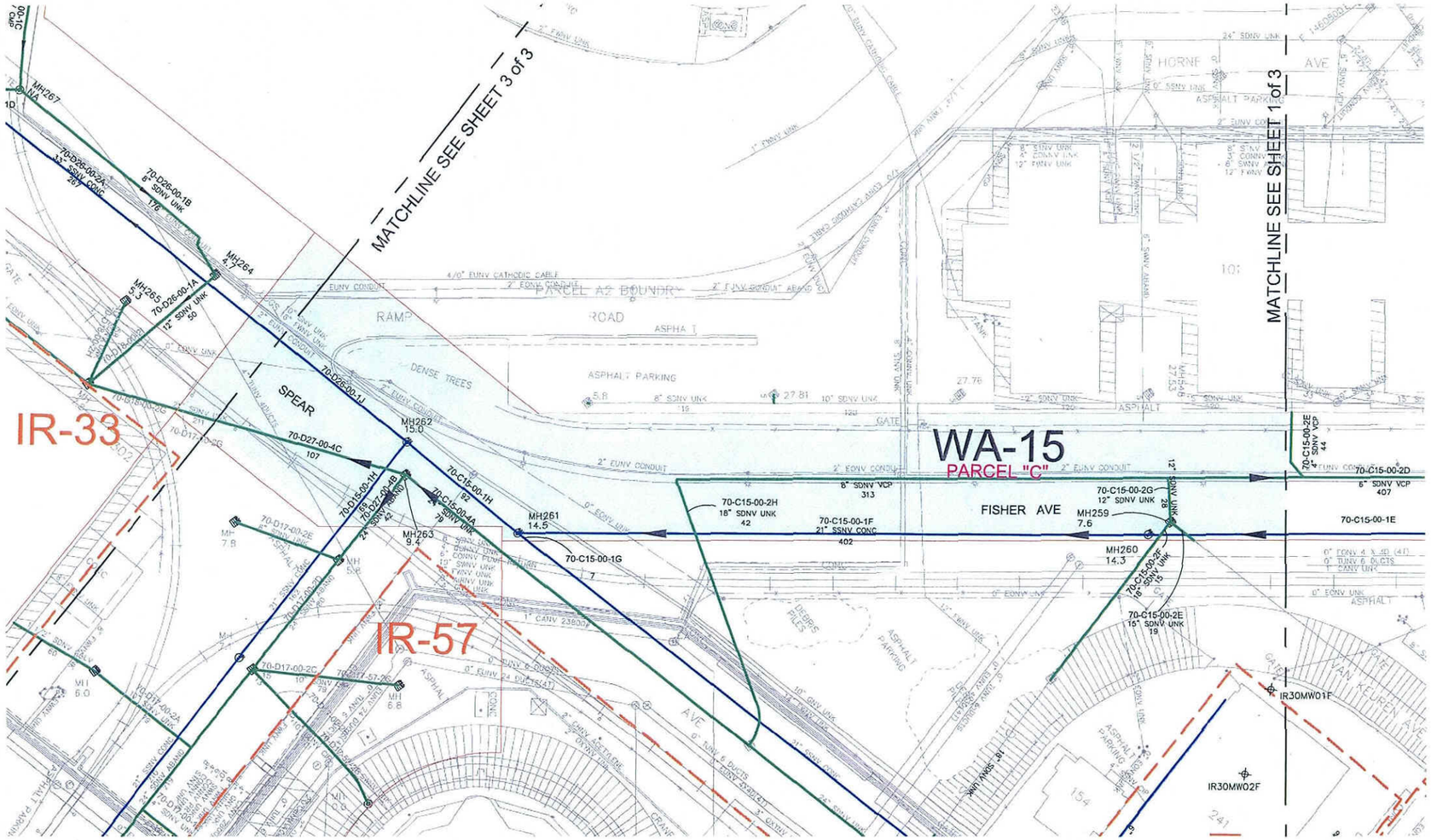
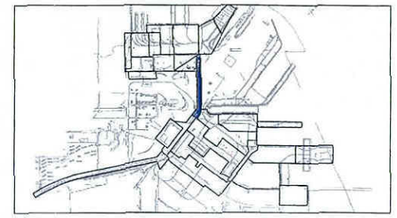
HUNTERS POINT SHIPYARD
SPEAR AVENUE
WORK AREA 26

DRAWING NO. 2597-WA14-5_26
SHEET: 1 OF 3
REVISION: A





KEY PLAN

LEGEND

SSNV – SANITARY SEWER LINE
SDNV – STORM DRAIN LINE
UNK – UNKNOWN
VCP – VITRIFIED CLAY PIPE
CIP – CAST IRON PIPE
CONC – CONCRETE
ABAND – ABANDON
PRF – PERFORATED
CMP – CORRUGATED METAL PIPE
FM – FORCE MAIN
RCP – REINFORCED CONCRETE PIPE
PVC – POLYVINYL CHLORIDE
CONNV – CONDENSATE LINE
STNV – STEAM LINE
SWNV – SALT WATER LINE
AIRNV – AIR LINE

157 — IMPACTED BUILDINGS
10 FOOT BUFFER

IR09MW63A — MONITORING WELL

MH 250 — MANHOLE NUMBER
15.5 OR UNK — BOTTOM DEPTH / BOTTOM DEPTH UNKNOWN
(S) OR OR (D)
0" OR 6" SDNV VCP — PIPE SIZE UNKNOWN / PIPE SIZE AND TYPE
06-B02-26-1A 67 — IMPACTED TRENCH ID INSIDE IR WITH DISTANCE (DISTANCE IN FEET)
06-B02-00-1A 42 — IMPACTED TRENCH ID OUTSIDE IR WITH DISTANCE (DISTANCE IN FEET)
IR BOUNDARIES
IMPACTED STORM, SANITARY PIPES AND STRUCTURES

XX-XXX-XX-XX — SEGMENT IDENTIFICATION
SEGMENT NO.
TRENCH NO.
IR SITE ID, 00 IF NON-IR SITE
WORK AREA
TASK ORDER NUMBER

WA-14 — WORK AREAS
STORM DRAIN
SANITARY SEWER
FLOW DIRECTION (TYP)
PARCEL BOUNDARY

DATUM:
HORIZONTAL: BASED ON NAD 27 CALIFORNIA COORDINATE SYSTEM, ZONE 3. CGF = 0.999286.
VERTICAL: BASED ON 1929 NGVD.
STATION BOUNDARY WAS DETERMINED FROM NAVFAC DWG. NOS. 1045757, 1045758, 1045759.

40 0 40 80
(feet)

WORKING DRAWING

DRAFT
02-25-08

RESPONSIBLE ENGINEER: T. LAI
DRAWN BY: A. CRABTREE
CHECKED BY:
PROJECT ENGINEER: T. LAI
DGN: ECSD-5713-0072-0009
DESIGN FILE NO. 2597-WA14-5_26.DWG
SCALE: AS SHOWN
SHEET SIZE: D

HUNTERS POINT SHIPYARD
SAN FRANCISCO, CA
P.O. BOX 884436, SAN FRANCISCO, CA 94188

TETRA TECH EC, INC
1230 COLUMBIA STREET, SUITE 500
SAN DIEGO, CA 92101
TEL: (619) 234-8890 FAX: (619) 234-8591

HUNTERS POINT SHIPYARD
FISHER STREET
WORK AREA 15

DRAWING NO.
2597-WA14-5_26

SHEET: 2 OF 3
REVISION: A

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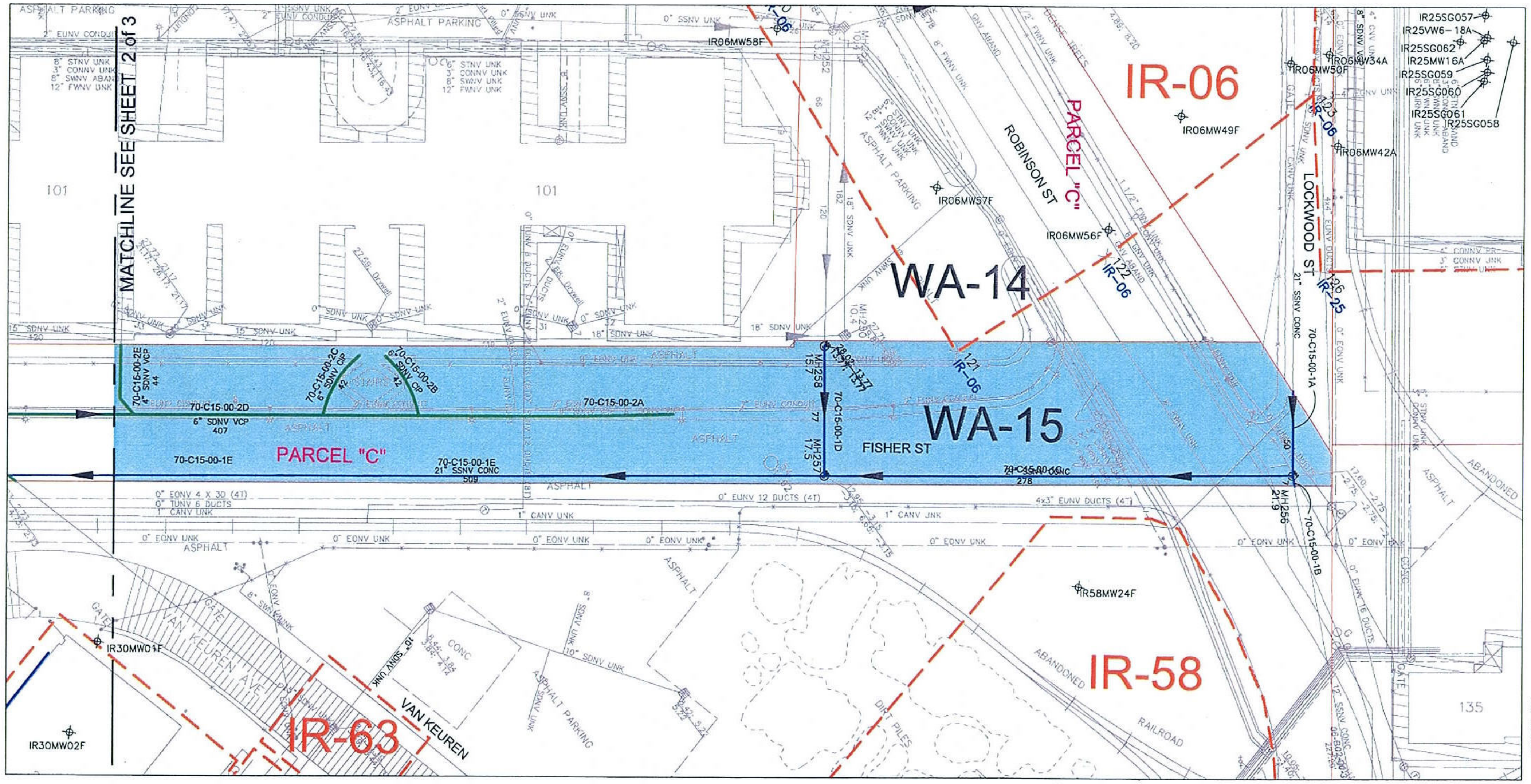

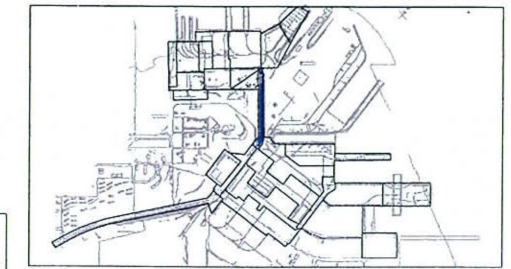

KEY PLAN

LEGEND

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FLOW DIRECTION (TYP)
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STATION BOUNDARY WAS DETERMINED FROM NAVFAC DWG. NOS. 1045757, 1045758, 1045759.

40 0 40 80
(feet)

WORKING DRAWING

DRAFT
02-25-08

\\ECISFOFILE1\PROJECTS\CTO 006\CAD\TO 70 PARCEL D\PARCEL D WORKING FILES\PARCEL D WORK AREAS 14-15_26\2597-WA14-5_26.DWG
PLOT/UPDATE: APR 01 2008 11:20:25

REV NO	DESCRIPTION	DATE	APPRV.

RESPONSIBLE ENGINEER: T. LAI
DRAWN BY: A. CRABTREE
CHECKED BY: L. BOREEN
PROJECT ENGINEER: T. LAI
DCN: ECSD-5713-0072-0009
DESIGN FILE NO. 2597-WA14-5_26.DWG
SCALE: AS SHOWN
SHEET SIZE: D

HUNTERS POINT SHIPYARD
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HUNTERS POINT SHIPYARD
FISHER STREET
WORK AREA 15

DRAWING NO.
2597-WA14-5_26
SHEET: 3 OF 3
REVISION: A

APPENDIX B

CONSTRUCTION SPECIFICATIONS

TETRA TECH

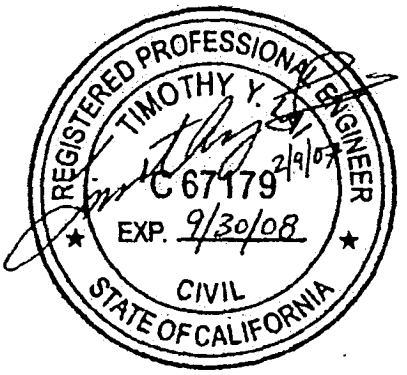
SPECIFICATIONS COVER SHEET

Project: Sanitary Sewer and Storm Drain Removal and Site Restoration, Hunters Point Shipyard, San Francisco, California

Client: Department of Navy

Document Title: Basewide Construction Specifications

Revision No: 0



Prepared By:

Senda Ozkan — Date: 2/9/07

Reviewed By:

James Chang — Date: 2/9/07

Approved By:

Tim Lai, PE — Date: 2/9/07

TETRA TECH

REVISION LOG

Revision Date	Revision No.	Prepared By	Description of Changes	Affected Pages
2/09/2007	0	Senda Ozkan	Original Issue	All

TETRA TECH

TABLE OF CONTENTS

SPECIFICATION SECTIONS

SECTION 02270
TEMPORARY EROSION, SEDIMENT AND STORMWATER RUNOFF CONTROL

PART 1 GENERAL

A. This work shall consist of furnishing, installing, constructing, and maintaining temporary erosion-control measures during construction to prevent sediments from entering the bay in accordance with the Stormwater Pollution Prevention Plan (SWPPP).

B. Temporary erosion and sediment control measures shall be constructed and maintained in accordance with these specifications and in compliance with the details shown in the Design Drawings and the SWPPP.

C. Stormwater runoff control measures shall be implemented to prevent unsafe ponding in low lying traffic sections and to divert storm water into the ground or to the San Francisco Bay.

PART 2 PRODUCTS

2.1 GENERAL

Temporary erosion and sediment control materials that are shown in Parcel-Specific Design drawings shall be used.

2.2 STORMWATER POLLUTION PREVENTION PLAN

A. A SWPPP is included in Appendix C of the Project Work Plan (Base-Wide Storm Drain and Sanitary Sewer Removal). The SWPPP addresses construction phases and proposed pollution-prevention measures during construction and outlines the sequence of implementation of the erosion and sediment control measures.

B. Tetra Tech EC, Inc. (TtEC) shall review temporary erosion control measures to be used at the pre-construction conference.

PART 3 EXECUTION

3.1 GENERAL

A. Construct temporary erosion, sediments, and stormwater runoff control measures specified in the Parcel-Specific Design Drawings.

B. Temporary erosion and sediment control measures shall be used, as applicable, for all construction activities.

1. Temporary erosion and sediment control measures shall also be used as necessary to correct unforeseen conditions not anticipated in the SWPPP that develop during construction.

2. Provide any engineering approved type and configuration of the particular measure unless otherwise designated in the contract. In all cases, the method of filtering runoff shall effectively prevent the discharge of sediment into streams and water impoundment areas on or off the project site, and shall comply with the requirements of the SWPPP.

3. Temporary erosion and sediment control features shall remain in place until permanent erosion-control measures are in place and operational to a point that will prevent erosion of the finished grades.

3.2 SEQUENCE OF OPERATIONS

A. Conduct an on site review of the SWPPP before starting construction operations.

B. Earth-disturbing operations shall not be initiated until the sequence and method of operations have been approved by Engineering.

3.3 PROTECTION OF WATERCOURSES

A. Schedule and conduct construction operations to prevent sediments from flowing to the bay adjacent to the project in full compliance with the SWPPP.

B. Temporary storage and staging areas and construction roads shall be located and constructed in a manner that will prevent sediments from entering the San Francisco Bay and that will permit effective application of erosion and sediment control measures.

C. At a minimum, a 10-mil plastic liner (HDPE, PVC, or equivalent) shall be used to cover stockpiles at the end of each day and during rainy weather and/or windy conditions. Sandbags or other applicable ballast shall be used to weigh down the cover.

D. The excavated soil (potentially contaminated), manholes, and pipes shall be spread out on a temporary lay down/staging area consisting of a minimum two 10-mil (or 1 20-mil) layers of HDPE, PVC liner or solid polyethylene trays. A minimum 10-mil liner can be used when the potentially contaminated item is placed on asphalt, concrete, or leveled/compacted ground (where the probability of liner puncture is lower).

E. Straw waddles shall be used as a berm to be built around the stockpiles and reinforced with sandbags as necessary.

F. Outfall structure construction shall be conducted at low-tide and adequate erosion and sediment control measures shall be applied.

3.4 INSPECTION AND MAINTENANCE

A. Inspect the erosion and sediment control measures installed on the project site at least once per month and within 24 hours after each rainfall of 0.2 inches or greater, in accordance with the SWPPP.

B. Repair any erosion and sediment control measures immediately following the inspection during which damage is noted or at any time following notification by the Engineer that repairs are required.

C. Repairs shall be initiated within 24 hours of damage occurring to erosion-control measures that could result in a discharge of sediment into the bay.

D. All temporary erosion and sediment control measures shall be maintained by cleaning or replacing as needed, or as directed by the Engineer.

E. Measures to remain following completion of the work shall be maintained until final acceptance of the project.

3.5 REMOVAL OF CONTROL MEASURES

A. Biodegradable erosion and sediment control features may remain in place after construction operations are completed unless otherwise designated in the contract.

B. Dispose of waste materials in accordance with the Waste Management Plan in the Base-wide Project Work Plan.

3.6 RECORD DRAWINGS

A. Actual locations of temporary swales may deviate from issued design drawings. The field engineer with the assistance of a licensed surveyor shall plan actual locations of the swales to take advantage of site topography. The field engineer is responsible for maintaining record drawings.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. The work described in this section includes the following:

1. Excavation of storm water and sewer lines.
2. Pipeline sealing.
3. Disposal of excavated materials.
4. Backfill and compaction.
5. Installation of new drainage system.

1.2 SUBMITTALS

A. For imported materials, the following test reports will be submitted and approved.

1. Grain Size Distribution [American Society for Testing Materials (ASTM) D 422-63] provided by the supplier. If not available, a competent TtEC person will evaluate the gradation of imported material for acceptance.
2. Test results for borrow source characterization (See Section 2.2).
3. Test reports shall be provided by a laboratory that is independent of the supplier.

B. Laboratory test results for backfilled soil (See Section 3.5F)

1. Optimum moisture content and maximum density (ASTM D 1557 – Standard Methods of Test for Moisture-Density Relations of Soils, Using 10-lb Hammer and 18-in. Drop)

C. In-situ field compaction test results (See Section 3.5F)

1. Use either ASTM D 1556 (Standard Method of Test for Density of Soil in Place by the Sand Cone Method) or ASTM D 2922 (Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

1.3 QUALITY ASSURANCE

A. Sampling, testing and inspection for compliance with the Contract documents shall be in accordance with the requirements specified herein.

PART 2 PRODUCTS

2.1 GENERAL

A. Materials shall be of the quality, size, shape, and gradation or equal to those as specified herein.

2.2 BORROW SOURCE CHARACTERIZATION

A. These activities shall be performed as specified below to ensure that imported materials are natural, native, virgin materials and free of contaminants, (including debris or recycled materials), and that they meet the requirements of the contract documents.

B. Import material will be characterized prior to any on-site placement. The characterization will include an analysis of a material source sample, site inspection, and site characterization.

C. Source Identification: Prior to material source sampling, the origin of imported materials and maps identifying specific location(s) of material source(s) will be evaluated.

D. Samples provided to the Responsible Person: The responsible person will be provided with a 10-gallon sample of material for each material source. Each sample should be a composite from no less than five sub samples taken throughout any one source. Each sample must be representative of the material to be imported. Samples must be provided well in advance of the delivery of the materials to the jobsite.

E. Inspection of Source: Tetra Tech EC, Inc. (TtEC) shall inspect all material sources. During such inspection, TtEC shall ensure that materials to be delivered to the jobsite are likely to meet the appropriate specifications. TtEC shall provide the responsible person 2 weeks notice of such inspections. The responsible person or a designated representative may accompany TtEC to witness such inspections. This witnessing shall in no way release TtEC from complying with the specifications and in no way shall be construed as approval of any particular source of material. During such inspection, TtEC shall take test sample(s) to be tested.

F. Testing and Reporting: TtEC shall test sample(s) of materials to be imported for the following:

1. Priority Pollutant Metals [U.S. Environmental Protection Agency (EPA 6010/6020/7000]

2. Volatile Organic Compounds (EPA 5035/8260B)

3. Semi-volatile Organic Compounds (EPA 8270C)

4. Polychlorinated biphenyls (PCBs) (EPA 8082) and Pesticides (EPA 8081A)

5. TPH-Purgable (EPA 8015B) and TPH-Extractable (EPA 3630C/8015B)

6. Gamma (EPA C1402-98)

7. Asbestos [if no certificate from facility (CARB 435)]

G. The results of such tests shall be provided before delivery of the materials to the project site. The results of each test shall be provided in a report that clearly identifies the following:

1. Source of samples

2. Sampling dates

3. Chain of custody

4. Sampling locations

5. TtEC's certification that the samples tested and the results provided is representative of materials that shall be delivered to the site.

H. Inspection of Materials at the Jobsite: TtEC shall visually inspect truckloads of import material upon delivery. Materials shall be inspected for presence of foreign, recycled, or reprocessed material. The responsible person may at any and all times perform an independent inspection. Material may be rejected due to identification of any such material or as a result of substandard test results. Materials may be segregated for testing based on appearance or odor. Segregated material may be tested according to procedures at the responsible person's discretion.

PART 3 EXECUTION

3.1 GENERAL

Excavation and other earth work activities shall conform to the design drawings, Parcel Specific Design Plan and Base-wide Project Work Plan as specified.

3.2 EXCAVATION OF STORM WATER AND SEWER LINES

A. Preparation activities before excavation includes the following: (1) Underground utility locate shall be conducted prior to excavation; (2) Groundwater monitoring wells to be properly abandoned if wells are within the excavation limits; (3) Remove trees, utility poles and other obstructions if they exist within the excavation limits.

B. All trenches and other excavations can have near vertical sides to facilitate pipe removal. If entry or exit from trenches is required, trenches and other excavations shall be protected against collapse by means of shoring in conformance with the applicable CAL-OSHA requirements. Sloping/benching or shoring must be approved

by a California-state registered engineer or his/her designated competent person as stated in the Base-wide Project Work Plan.

C. Excavation shall stop at approximately 10 feet from an existing building that will be demolished in the future. Obtain approval from Engineering to excavate closer than 10 feet.

D. TtEC shall take adequate measures to prevent unauthorized entry into excavation areas. The measures shall include installing guard railing, and solid or chain link fencing.

3.3 PIPELINE SEALING

A. Pipelines will be closed by sealing the upstream and/or downstream ends of the lines with a common cement mixture (grout) or by using a mechanical plug as shown in design drawings. The closure should ensure that no water enters the lines. The downstream closure should be performed after the line is completely drained. A temporary plug can be used during the removal actions.

B. The cement plugs shall be a minimum of 12-inch thick with a suitable backing to hold the plug in place. The front of the plug shall overlap the edge of the pipe to form a lip to hold the plug in position during backfill operations.

3.4 DISPOSAL OF EXCAVATED MATERIAL

All waste materials generated as a result of excavation activities shall be controlled and managed in accordance with the Waste Management Plan in the Base-wide Project Work Plan.

3.5 BACKFILL AND COMPACTION

Excavated trenches shall be backfilled to approximately their original grade prior to excavation. In areas where a new drainage swale will be installed, backfilling shall be to the level indicated in the design drawings.

A. Backfill Material

1. Chemically and radiologicaly tested and cleared excavated material including crushed clay pipes and objects can be used as backfill. Boulders or objects larger than 6" shall not be used within 4 feet of the final surface elevation or near installed pipes.

2. Imported soil shall be "clean" (chemical/rad levels shall be acceptable) and specification sheet submitted to the engineer for approval. Import soil particles shall be less than 2 inches in diameter. Soil used in traffic areas within 2 feet of

final grade shall be well-graded (GW or SW) for ease of compaction and to provide a firm base. Traffic areas shall be designated by the engineer.

3. Poorly graded river rock and crushed stone can be laid (instead of excavated material) in trenches without specific compaction requirements.

4. Small boulders, rock, and stone shall be used to stabilize the base of deep trenches when groundwater is encountered.

B. Non-traffic Areas - Backfill shall be placed in 2 feet thick (loose) lifts. Compaction shall be achieved by pressing the soil down using heavy equipment such as an excavator or dozer (2 to 3 presses). The final 2 feet lift shall be compacted using a minimum of four passes of a single drum vibratory roller (Bomag model BW124DH-3 or equivalent).

C. Traffic Areas - Backfill shall be placed in 2 feet thick (loose) lifts until within the final 2 feet of final grade. Compaction shall be achieved by pressing the soil down using heavy equipment such as an excavator or dozer (2 to 3 presses). Soil used in the final 2 feet shall be placed in 12 inch lifts. Compaction shall be achieved by using a minimum of four passes of a single drum vibratory roller for each lift.

D. Near Installed Pipes (pipe bedding and cover) – Backfill shall be placed in 12 inch lifts. Compaction shall be achieved by using a handheld plate compactor (Wacker Pocker Plate Compactor model WP1550A or equivalent) with 2 passes as a minimum. A minimum of 3 feet cover shall be placed prior to heavy equipment compaction. If this is not possible, controlled density fill (CDF) [or lean concrete] shall be used.

E. Deep trenches – Groundwater is expected in deep trenches (more than 4 feet deep). Small boulders and gravel shall be placed until the base of the trench is stabilized (slightly above the water table). No compaction requirements are specified for the small boulders and gravel under water. Use a vibratory or needle/wheel compactor attachment with the backhoe/excavator to compact the soil above the stabilized base. The vibratory/impact energy required (number of passes/size of attachment) will depend on the trench size and condition, type of soil and shall be evaluated by Engineering

F. Main arterial roads (shown on the design drawings or as designated by Engineering) – A relative compaction of not less than 95% is required throughout each layer/lift of backfill within 3 feet of pavement subgrade, or adjacent ground (City and County of San Francisco Standard Specification Section 707.02). A minimum of one compaction sample shall be taken every 50 feet of trench. Laboratory tests for maximum dry density and optimum moisture content are required for each batch/source of backfill material. A minimum of one sample for every 5000 cubic yards is required. Additional samples may be requested by Engineering. For areas

below 3 feet of pavement subgrade, target a relative compaction of 90% or more. No in-situ testing is required but procedures for deep trenches should be followed.

3.6 INSTALLATION OF NEW STORM DRAINAGE SYSTEM

A surface drainage swale system will be constructed with non-woven geotextile and/or HDPE liner and drain rock and discharging through rock apron outfalls per the design drawings.

A. Installation of the Liner and Erosion Control Rock for Drainage Swales

1. Geotextile and/or geomembrane shall be installed in drainage swales and outfalls as specified in design drawings and according to manufacturer's requirements.

2. Geotextile fabric shall be 8 ounces/yard non-woven type conforming to AASHTO Specification M288-96. The geomembrane shall be comprised of a minimum 20-mil plastic liner (HDPE, PVC, or equivalent) or two 10-mil liners at the base of the drainage swales and outfalls.

3. Placement shall be made in a manner that will produce a smooth blanket with minimum 3 foot overlap at seams working out any wrinkles. Displacement of geotextile / HDPE shall be repaired or corrected prior to covering it with rock. Liner shall be inspected for damage and movement after storm events and repaired if needed.

4. Dense, sound, clean, durable rock with dimensions between ¼ inch to two-inch in diameter shall be placed on prepared surface providing a dense mass with a minimum thickness of three inches conforming to the grades and dimensions as shown in the design drawings. Installed rock shall be inspected for damage and movement after storm events and repaired if needed.

B. Erosion Control Riprap for Outfalls:

1. Riprap shall be solid, durable rock with sufficient smaller rock to provide a dense mass.

2. Average minimum rock size, D_{50}, and minimum thickness of rock apron are specified in the design drawings.

END OF SECTION

APPENDIX C

CONTRACTOR QUALITY CONTROL PLAN

Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

Contract No. N68711-98-D-5713
CTO 0072

FINAL

AREA-SPECIFIC CONTRACTOR QUALITY CONTROL PLAN WORK AREAS 15 AND 26

May 29, 2008

STORM DRAIN AND
SANITARY SEWER REMOVAL
PARCELS C AND D, HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA

DCN: ECSD-5713-0072-0009.R1

TETRA TECH EC, INC.
1230 Columbia Street, Suite 750
San Diego, CA 92101-8536

Gregory D. Joyce
QC Program Manager

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

CQCP	Contractor Quality Control Plan
PQCM	Project Quality Control Manager
TtEC	Tetra Tech EC, Inc.

1.0 INTRODUCTION

Appendix B of the *Final Project Work Plan, Revision 1, Base-wide Storm Drain and Sanitary Sewer Removal* (Tetra Tech EC, Inc. [TtEC] 2007) provides the Project Contractor Quality Control Plan requirements applicable to the work to be performed in Work Areas 15 and 26. The Project Contractor Quality Control Plan establishes the procedures and methods to be followed for field inspections and provides an effective quality control system to ensure the quality of the work performed by TtEC and its subcontractors.

Attachment 1 of this area-specific Contractor Quality Control Plan (CQCP) lists the definable features of work and details the steps to be taken to verify both the quality of the work and compliance with specified requirements, which include inspecting materials and workmanship before, during, and after execution of each definable feature of work.

Attachment 2 of this CQCP is the Submittal Register that is to be maintained and kept current by TtEC at the job site. The register includes the status of the submittals required by the contract. Submittals will be reviewed for compliance with contract requirements independent of the Project Quality Control Manager (PQCM) review prior to approval by the PQCM.

2.0 REFERENCES

Tetra Tech EC, Inc. 2007. *Final Project Work Plan, Revision 1, Base-wide Storm Drain and Sanitary Sewer Removal,* Hunters Point Shipyard, San Francisco, California. August 21.

ATTACHMENT 1

DEFINABLE FEATURES OF WORK

ATTACHMENT 1

DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Environmental resources survey	• Review survey areas as identified in the Work Plan and Design Plans. • Verify that RPM and NWB have been notified about the environmental survey. • Verify that ROICC and CSO have been notified. • Review AHAs. • Verify that a project kickoff meeting was held. • Verify that project kickoff meeting minutes were prepared, reviewed, and distributed. • Verify the qualifications of TtEC's Wildlife Biologist. • Verify that the biological resource requirements have been met. • Inspect record for radiation general awareness training for all workers. • Verify that USACE ecologist has been informed. • Verify that all personnel have signed the RWP.		• Inspect environmental survey documentation. • Verify that qualified RCT and SHSS are present at active work areas. • Verify that site activities are being photographed.		• Verify that environmental resource survey is conducted in all areas where field activities will take place and adjacent areas. • Verify that qualified RCT and SHSS are present at active work areas. • Verify that radiological survey is being conducted in accordance with the Work Plan and Design Plan. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	
Clearing of vegetation and/or pavement	• Verify that RPM and CSO have been notified. • Verify that management of cleared vegetation and/or pavement protocol is established based on the results of vegetation survey. • Review AHAs. • Verify that PPE is available and meets requirements of the SHSP. • Verify that the area has been walked/visually inspected for items that could interfere with clearing (utilities, rebar, etc.). • Verify that radiation awareness training has been		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that vegetation and/or pavement is removed throughout the excavation area. • Verify that waste vegetation and/or pavement is being managed as required.		• Continue to inspect ongoing activities. • Verify that qualified RCT and SHSS are present at active work areas. • Verify that vegetation and/or pavement stockpiles are maintained per the Work Plan and Design Plan requirements. • Verify that vegetation and/or pavement are disposed of in accordance with Work Plan requirements, and that the stockpile locations are cleaned up. • Verify that site activities are being photographed.	

ATTACHMENT 1

DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Clearing of vegetation and/or pavement (continued)	completed and that training is documented. • Verify that traffic schedule has been approved by CSO and ROICC.		• Verify that vegetation removed from radiologically impacted sites is stockpiled at the site of origin. • Verify that the activity is photographed.		• Verify that photographs are logged and stored.	
Geophysical survey	• Verify that RPM and CSO have been notified. • Verify that survey instrument certification is current and in good condition. • Verify that sensitive locations at the site are delineated and work crews are aware of restricted areas. • Review control points. • Review AHAs. • Review the Work Plan and Design Plan and drawings for this activity. • Review boundaries and extent of survey. • Verify that radiation awareness training has been completed and training is documented. • Verify that designated personnel have assigned dosimeters and completed NRC Form 4.		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that surveyor has correct control point information. • Verify that the geophysical survey is performed over areas of known or suspected subsurface utilities. • Verify boundaries and extent of survey. • Verify that site activities are being photographed.		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that utility locations are marked in the field and identified to the equipment operators. • Verify that boundaries of survey have been met. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Topographical survey	• Verify that RPM and CSO have been notified. • Verify that survey instrument certification is current and in good condition. • Verify that sensitive locations at the site are delineated and work crews are aware of restricted areas. • Review control points. • Review AHAs. • Review the Work Plan and Design Plan and drawings for this activity. • Review boundaries and extent of survey.. • Verify that radiation awareness training has been completed and training is documented. • Verify that designated personnel have assigned dosimeters and completed NRC Form 4.		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that surveyor understands the work scope and coordinates system to be used. • Verify the measurement of grid system. • Verify that site activities are being photographed.		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that pre-excavation drawings/maps are complete and correct. • Verify that survey includes limits of excavation and identifiable features. • Verify that boundaries of survey have been met. • Verify that nodes of each grid system are marked. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	
Radiological surveys	• Verify that RPM, RASO, and CSO have been notified. • Verify that an approved RWP is available and has been read and signed by assigned personnel. • Verify that Work Plan and Design Plan and AHAs have been reviewed. • Verify that assigned personnel are trained and qualified. • Verify that training record documentation is being maintained. • Verify that personnel have been given an emergency notification procedure.		• Verify that radiological instruments are as specified in the Work Plan and Design Plan. • Verify that qualified RCT and SHSS are present at active work areas. • Verify that site activities are being photographed. • Verify that the reference area measurements have been obtained using the procedure described in the Work Plan and Design Plan.		• Verify that site is properly posted and secured, if necessary. • Conduct ongoing inspection of material and equipment. • Verify that qualified RCT and SHSS are present at active work areas. • Verify that required dosimetry is being worn. • Verify that any suspected material location is marked, flagged, and documented. • Verify that daily instrument checks and background measurements are obtained and documented.	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Radiological surveys (continued)	• Verify that workers assigned dosimetry have completed NRC Form 4. • Verify that relevant SOPs and/or manufacturers' instructions are available and have been reviewed for equipment to be used for radiological surveys. • Verify that limits and boundaries of surveys have been established and are understood. • Verify background check. • Verify that calibration of survey instrument is within 1 year. • Verify that equipment is on site. • Verify that traffic schedule has been approved by CSO.		• Verify that daily checks are performed on all portable survey instruments. • Verify that required dosimetry is being worn. • Verify that RWP is available at work site. • Verify that field logbooks and proper forms are in use. • Verify that measurements are being collected in accordance with the Work Plan and Design Plan, SAP, and relevant SOPs. • Verify that limits and boundaries of survey are being met.		• Verify that survey results are documented. • Verify that RWP is available at work site. • Verify that personnel have read and signed the revised RWP, if revision is required. • Verify that survey data and sample analysis results are reviewed as required by the SOPs. • Verify that survey activities conform to the Work Plan and Design Plan and SOPs. • Verify that boundaries of the survey have been met. • Verify that survey instrument is recalibrated after repairs or modifications. • Verify that personnel surveys are performed for all personnel leaving a radiological controlled area. • Verify that RASO is notified of discovered radioactive material. • Verify that area known or suspected to contain radioactive material is isolated. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Identification and removal of radioactive material	• Verify that RPM, CSO, and RASO have been notified. • Review procedures. Verify background activity and what constitutes a deviation. • Review AHAs. • Verify that equipment, instruments, and materials are on site, calibrated, and in working order. • Verify that required stockpile and staging areas are established. • Review the Work Plan and Design Plan. • Verify that PPE is available and meets requirements of the SHSP. • Verify that radiation awareness training has been completed and training is documented. • Verify that designated personnel have assigned dosimeters and completed NRC Form 4. • Verify that a log and database are established for identified material. • Verify that traffic schedule has been approved by CSO. • Verify that personnel have been given an emergency notification procedure.		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that required dosimetry is being worn. • Verify PPE of all workers. • Verify that RTM has evaluated radiological impact of the material prior to any action for each material. • Verify that radiological safety instruction specific to each material has been reviewed by RCT and RTM. • Verify that RCT is present during removal of any source. • Verify that a surface survey is completed for the initial surface area and each subsequent 1-foot excavation. • Verify that all boxes and drums have been surveyed and surface radiation measurements are collected. • Verify that site activities are being photographed. • Verify that proper logging, recording, and photography of found point sources are being done.		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that required dosimetry is being worn. • Verify that removal of radioactive material is conducted in accordance with the procedures and work plans. • Verify that an additional 1 foot of soil in every direction is excavated after removal of material. • Verify that RCT scanned the excavated area after radioactive material removal. • Verify that personnel surveys are performed for all personnel leaving a radiological controlled area. • Review radiological logbook for completeness of documentation. • Inspect contaminated material handling procedure. • Verify that removed point source has unique identification, documented in the logbook and the drum inventory sheet. • Verify that removed point source storage and management procedure is in accordance with the Work Plan and Design Plan. • Verify that all bags and drums are marked with a unique identification and information is recorded in the logbook. • Verify that filled drums are stored in	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Identification and removal of radioactive material (continued)			• Verify that traffic schedule has been approved by CSO.		approved storage areas. • Verify that liner remains in good condition. • Verify that the log of radioactive material is routinely reviewed by the CHP. • Verify that traffic schedule has been approved by CSO. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	
Excavation and removal of soil/piping	• Verify that the RPM and CSO have been notified. • Verify that Cal-OSHA has been notified 5 days prior to excavation. • Verify that USA has been notified 72 hours prior to excavation. • Verify that an assignment letter for competent person is on file. • Verify that training requirements are met for all personnel. • Verify that OSHA excavation permit is on site. • Verify that OSHA excavation regulations are reviewed. • Verify that equipment and material are surveyed for radiation and survey results are documented. • Verify that final excavation configurations have been reviewed with the DoN and regulators.		• Verify that the RCT and SHSS are present in an active work area. • Verify that a spotter trained in recognizing underground utilities is present at all times. • Verify that airborne concentrations do not exceed the established levels. • Verify that air monitoring and initial baseline sampling are being performed per SHSP. • Verify that required dosimetry is being worn. • Verify that all personnel have signed the RWP(s). • Verify that the excavation protocol, as described in the		• Verify that RCT and SHSS are present in an active work area. • Verify that a spotter trained in recognizing underground utilities is present at all times. • Verify that airborne concentrations do not exceed the established levels. • Verify that air and soil samples are collected as required. • Verify that trenching excavation is performed in accordance with the work plans and specifications. • Verify that pipeline draining is performed in accordance with the work plans and specifications. • Verify that swipe samples are collected from each 10-foot section of removed	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Excavation and removal of soil/piping (continued)	• Verify that initial background air sampling has been conducted. • Verify that electrical lines are de-energized, if necessary. • Verify that existing utilities and structures are removed, if necessary. • Verify that proper equipment is on site to perform work. • Review the Work Plan and Design Plan. • Review the AHAs. • Verify that PPE is available and meets the requirements of the SHSP. • Verify that radiation awareness training has been completed and documented. • Verify that all personnel have assigned dosimeters and completed the NRC Form 4. • Verify that the RWP is in place and that all workers have read the requirements. • Verify that the Traffic Control Plan is in place and reviewed. • Verify that traffic schedule has been approved by the CSO.		Work Plan and Design Plan, is being followed. • Verify that dust control is used as necessary. • Verify that site activities are being photographed. • Verify that permit conditions are followed. • Verify sediment control per the SWPPP. • Verify that traffic control procedures are being followed.		piping. • Verify that solid samples are collected if material is found to be present within the removed section of pipe. • Verify that open sewer or storm drain lines, temporarily left in place during the removal process, are plugged as described in the work plans. • Verify that pipeline closures are performed in accordance with the work plans and specifications. • Verify that required dosimetry is being worn. • Verify that daily safety briefings discuss status of RWP(s). • Verify that RWP is available at the work location. • Verify that RWP is modified in the event of changes to the conditions. • Verify that modified RWP was concurred with by RASO and concurrence is documented. • Verify that tools, material, and equipment are cleaned, wiped down, and surveyed prior to removal. • Verify that excavation protocol, as described in the Work Plan and Design Plan, is being followed. • Verify that visually stained soil/material is segregated.	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Excavation and removal of soil/piping (continued)					• Verify that competent person is conducting daily inspection of the excavation and slope stability, and that the inspection is documented in a logbook. • Continue to inspect ongoing work. • Verify sediment control per the SWPPP. • Verify that personnel surveys are performed for all personnel leaving a radiological controlled area. • Verify that site activities are being photographed. • Verify that photographs are logged and stored. • Verify that traffic control procedures are being followed.	
Outfall removal and replacement	• Verify that the RPM and CSO have been notified. • Verify that training requirements have been met for all personnel. • Verify that proper equipment is on site to perform work. • Review the Work Plan and Design Plan. • Review the AHAs. • Verify that PPE is available and meets the requirements of the SHSP. • Verify that radiation awareness training has been completed and that training is documented. • Verify that designated personnel have assigned		• Verify that the RCT and SHSS are present in an active work area. • Verify that air monitoring and initial baseline sampling are being performed per SHSP. • Verify that required dosimetry is being worn. • Verify that all personnel have signed the RWP(s). • Verify that the outfall removal and replacement protocol, as described in the Work Plan and Design Plan, is being followed.		• Verify that RCT and SHSS are present in an active work area. • Verify that airborne concentrations do not exceed the established levels. • Verify that air and water samples are collected as required. • Verify that required dosimetry is being worn. • Verify that daily safety briefings discuss status of RWP(s). • Verify that RWP is available at the work location. • Verify that RWP is modified in the event	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Outfall removal and replacement (continued)	dosimeters and completed NRC Form 4.		• Verify that site activities are being photographed.		of changes to the conditions. • Verify that during invasive outfall work the water level inside the interlocking sheet pile walls is maintained at least 1 foot below the working level. • If sediments are disturbed during invasive outfall work, verify that recurring waters are pumped to baker tanks and sampled in accordance with SAP requirements. • Verify that interlocking sheet pilings remain in place until the removal, replacement (as applicable), and required sampling and analyses are completed. • Verify that tools, material, and equipment are cleaned, wiped down, and surveyed prior to removal.	
Dewatering of excavated materials	• Verify that RPM and CSO have been notified. • Verify that proper equipment is on site to perform work. • Verify that the sump and storage tank is plumbed. • Verify that PPE is available and meets requirements of the SHSP. • Review the Work Plan and Design Plan. • Review AHAs. • Verify that radiation awareness training has been completed and that training is documented. • Verify that designated personnel have assigned		• Verify that work performed is in compliance with the Work Plan and Design Plan. • Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn. • Verify that site activities are being photographed.		• Continue to verify that work is completed as required. • Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn. • Verify that personnel surveys are performed for all personnel leaving the radiological controlled area. • Verify that water from the soil pads is collected, characterized for chemical and radiological constituents, and properly disposed of.	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Dewatering of excavated materials (continued)	dosimeters and completed NRC Form 4.				• Verify that wastewater sampling is conducted in accordance with the procedures and frequency detailed in the SAP. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	
Additional radioactive materials	• Verify that RPM, CSO, and RASO have been notified. • Review procedures. • Review AHAs. • Verify that equipment, instruments, and materials are on site and are calibrated and in working order. • Review the Work Plan and Design Plan. • Verify that PPE is available and meets requirements of the SHSP. • Verify that radiation awareness training has been completed and training is documented. • Verify that designated personnel have assigned dosimeters and completed NRC Form 4. • Verify that a log and database are established for identified material. • Verify that traffic schedule has been approved by CSO. • Verify that personnel have been given an emergency notification procedure.		• Verify that qualified RCT and SHSS are present at active work areas. • Verify that required dosimetry is being worn. • Verify PPE of all workers. • Verify that RTM has evaluated radiological impact of the material prior to any action for each material. • Verify that radiological safety instruction specific to each material has been reviewed by RCT and RTM. • Verify that RCT is on site during removal activities. • Verify that site activities are being photographed.		• Verify that a qualified RCT and SHSS are present at active work areas. • Verify that required dosimetry is being worn. • Verify that soils and piping are removed, stockpiled, surveyed, and sampled in accordance with Work Plan and Design Plan. • Verify that the RCT scanned the excavated area after radioactive material removal. • Verify that personnel surveys are performed for all personnel leaving a radiological controlled area. • Inspect radiological logbook for completeness of documentation. • Verify that log of radioactive material is routinely reviewed by CHP. • Verify that site activities are being photographed. • Verify that photographs are logged and	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Additional radioactive materials (continued)					stored.	
Final status survey	• Verify that RPM and CSO have been notified. • Review the Work Plan and Design Plan, SAP, and the SHSP. • Verify that radiation awareness training has been completed and training is documented. • Verify that designated personnel have assigned dosimeters and completed the NRC Form 4. • Verify that PPE is available.		• Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn.		• Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn. • Conduct ongoing inspection of decontamination and survey activities. • Verify that site activities are being photographed. • Verify that photographs are logged and stored. • Verify that survey forms are properly completed and stored.	
Final status survey sampling	• Verify that RPM and CSO have been notified. • Review the Work Plan and Design Plan, SAP, and SHSP. • Verify that radiation awareness training has been completed and training is documented. • Verify that designated personnel have assigned dosimeters and completed the NRC Form 4. • Verify that PPE is available.		• Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn. • Review sample handling procedures.		• Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn. • Verify that samples are collected in accordance with the sample handling procedures. • Inspect field documentation. • Verify that personnel surveys are performed for all personnel leaving the radiological controlled area. • Verify that site activities are being photographed.	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Final status survey sampling (continued)					• Verify that photographs are logged and stored. • Verify that sample locations are surveyed. • Verify sample chain-of-custody form.	
Backfill placement and compaction	• Verify that RPM and CSO have been notified. • Verify that compaction equipment is available. • Review the Work Plan and Design Plan and verify that adequate material is available for fill. • Verify that site has been surveyed prior to backfill. • Review AHAs. • Review the Work Plan and Design Plan. • Verify that PPE is available and meets requirements of SHSP. • Verify that radiation awareness training has been completed and that training is documented. • Verify that designated personnel have assigned dosimeters and completed NRC Form 4.		• Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn. • Verify that samples of proposed materials have been submitted and approved.		• Conduct ongoing inspection of backfilling and compaction operation. • Verify that backfill placement and compaction are completed in accordance with the plans and specifications. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	
Waste profiling	• Verify that testing services will be available for the testing of the waste samples. • Review the WMP, Work Plan, Design Plan, and AHAs. • Verify that PPE is available and meets requirements of the SHSP. • Verify that there is adequate equipment and materials to decontaminate sample equipment as necessary.		• Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn.		• Verify that RCT and SHSS are present in an active work area. • Verify that required dosimetry is being worn. • Verify that data have been collected in compliance with the WMP. • Verify sample collection and labeling of samples. • Verify DOT labeling.	

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DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Waste profiling (continued)	• Inspect record for radiation general awareness training for all workers. • Verify that NRC Form 4 is completed for each worker. • Verify that all personnel have signed the RWP.				• Continue to inspect ongoing work. • Verify that site activities are being photographed. • Verify that photographs are logged and stored.	
Site restoration	• Verify that RPM and CSO have been notified. • Review AHAs. • Verify that PPE is available and meets requirements of the SHSP. • Review site restoration activities and procedure.		• Verify that site demobilization procedures have concurrence from RPM and CSO. • Inspect site restoration activities. • Verify that site activities are being photographed (before/after photographs).		• Conduct ongoing inspection of site restoration activities. • Verify that site activities are being photographed. • Verify that photographs are logged and stored. • Verify that radiological survey is being conducted in accordance with the Work Plan and Design Plan. • Verify that construction-related damages are repaired.	

ATTACHMENT 1

DEFINABLE FEATURES OF WORK

ACTIVITY	PREPARATORY	DONE	INITIAL	DONE	FOLLOW-UP	DONE
Demobilization	• Verify that RPM and CSO have been notified. • Review AHAs. • Verify that PPE is available and meets requirements of the SHSP. • Review site demobilization procedures.		• Verify that decontamination and survey procedures are being followed. • Verify that required dosimetry is being worn. • Verify documentation. • Verify that site activities are being photographed. • Verify that surveys are being documented on the appropriate form.		• Conduct ongoing inspection of decontamination and survey activities. • Verify that required dosimetry is being worn. • Verify that RTM, SHSS, and Construction Manager inspected and approved all equipment and material prior to removing from the site. • Verify that site activities are being photographed. • Verify that photographs are logged and stored. • Verify that survey forms are properly completed and stored.	

Abbreviations and Acronyms:

AHA – Activity Hazard Analysis
Cal-OSHA – California Occupational Safety and Health Administration
CHP – Certified Health Physicist
CSO – Caretaker Site Office
DoN – Department of the Navy
DOT – Department of Transportation
NRC – Nuclear Regulatory Commission
NWB – Navy Wildlife Biologist
OSHA – Occupational Safety and Health Administration
PPE – personal protective equipment
RASO – Radiological Affairs Support Office
RCT – Radiological Control Technician
ROICC – Resident Officer in Charge of Construction
RPM – Remedial Project Manager
RTM – Radiological Task Manager
RWP – Radiation Work Permit
SAP – Sampling and Analysis Plan
SHSP – Site Health and Safety Plan
SHSS – Site Health and Safety Specialist
SOP – Standard Operating Procedure
SWPPP – Stormwater Pollution Prevention Plan
TtEC – Tetra Tech EC, Inc.
USA – Underground Service Alert
USACE – United States Army Corps of Engineers
WMP – Waste Management Plan

ATTACHMENT 2

SUBMITTAL REGISTER

ATTACHMENT 2

SUBMITTAL REGISTER

Contract Number: N68711-98-D-5713	Contract Task Order: 0072 Project Title: Base-wide Radiological Surveys	Location: Hunters Point Shipyard San Francisco, California	Contractor: Tetra Tech EC, Incorporated

							Contractor Action			Approving Authority Action				Contracting Officer / Contractor	
Specification Section Number	SD No and Type of Submittal Material or Product	Specification Paragraph Number	Classification/ Approval By CO*	Govt. or A/E Reviewer	Transmittal Control No.	Planned Submittal Date	Action Code	Date of Action	Date FWD to Approving Authority Date recd. from Contractor	Date FWD to other Reviewer	Date Received from other Reviewer	Action Code	Date of Action	Mailed to Contractor/ Received from Approving Authroity	Remarks
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
Contract Task Order	Design Plan (Work Areas 15 and 26) Draft Final	2.4	G	COR											
02300	Import Material Test Reports	1.2 A													
02300	Laboratory Tests for Backfill Soil	1.2 B													
02300	In-situ Field Compaction Test Results	1.2 C													

* Approved by: G - Contracting Officer, Blank - CQC Manager

Action Code: NR - Not Reviewed, AN - Approved as Noted, A - Approved, RR - Disapproved: Revise and Resubmit